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THE POPULATION EXPLOSION

by Paul and Anne Ehrlich

[p.p. 37-40, Paul and Anne Ehrlich, **THE POPULATION EXPLOSION;** Simon and Schuster, 1990.]

Having considered some of the ways that humanity is destroying its inheritance, we can look more closely at the concept of "overpopulation." All too often, overpopulation is thought of simply as crowding: too many people in a given area, too high a population density. For instance, the deputy editor in chief of Forbes magazine pointed out recently, in connection with a plea for more population growth in the United States: "If all the people from China and India lived in the continental U.S. (excluding Alaska), this country would still have a smaller population density than England, Holland, or Belgium."

The appropriate response is "So what?" Density is generally irrelevant to questions of overpopulation. For instance, if brute density were the criterion, one would have to conclude that Africa is "underpopulated," because it has only 55 people per square mile, while Europe (excluding the USSR) has 261 and Japan 857. A more sophisticated measure would take into consideration the amount of Africa not covered by desert or "impenetrable" forest. This more habitable portion is just a little over half the continent's area, giving an effective population density of 117 per square mile. That's still only about a fifth of that in the United Kingdom. Even by 2020, Africa's effective density is projected to grow to only about that of France today (266), and few people would consider France excessively crowded or overpopulated.

When people think of crowded countries, they usually contemplate places like the Netherlands (1,031 per square mile), Taiwan (1,604), or Hong Kong (14,218). Even those don't necessarily signal overpopulation—after all, the Dutch seem to be thriving, and doesn't Hong Kong have a booming economy and fancy hotels? In short, if density were the standard of overpopulation, few nations (and certainly not Earth itself) would be likely to be considered overpopulated in the near future. The error, we repeat, lies in trying to define overpopulation in terms of density; it has long been recognized that density per se means very little.

The key to understanding overpopulation is not population density but the numbers of people in an area relative to its resources and the capacity of the environment to sustain human activities; that is, to the area's carrying capacity. When is an area overpopulated? When its population can't be maintained without rapidly depleting nonrenewable resources (or converting renewable resources into nonrenewable ones) and without degrading the capacity of the environment to support the population. In short, if the long-term carrying capacity of an area is clearly being degraded by its current human occupants, that area is overpopulated.

By this standard, the entire planet and virtually every nation is already vastly overpopulated. Africa is overpopulated now because, among other indications, its soils and forests are rapidly being depleted—and that implies that its carrying capacity for human beings will be lower in the future than it is now. The United States is overpopulated because it is depleting its soil and water resources and contributing mightily to the destruction of global environmental systems. Europe, Japan, the Soviet Union, and other rich nations are overpopulated because of their massive contributions to the carbon dioxide buildup in the atmosphere, among many other reasons.

Almost all the rich nations are overpopulated because they are rapidly drawing down stocks of resources around the world. They don't live solely on the land in their own nations. Like the profligate son of our earlier analogy, they are spending their capital with no thought for the future.

It is especially ironic that Forbes considered the Netherlands not to be overpopulated. This is such a common error that it has been known for two decades as the "Netherlands Fallacy." The Netherlands can support 1,031 people per square mile only because the rest of the world does not. In 1984-86, the Netherlands imported almost 4 million tons of cereals, 130,000 tons of oils, and 480,000 tons of pulses

(peas, beans, lentils). It took some of these relatively inexpensive imports and used them to boost their production of expensive exports—330,000 tons of milk and 1.2 million tons of meat. The-Netherlands also extracted about a half-million tons of fishes from the sea during this period, and imported more in the form of fish meal.

The Netherlands is also a major importer of minerals, bringing in virtually all the iron, antimony, bauxite, copper, tin, etc., that it requires. Most of its fresh water is "imported" from upstream nations via the Rhine River. The Dutch built their wealth using imported energy. Then, in the 1970s, the discovery of a large gas field in the northern part of the nation allowed the Netherlands temporarily to export as gas roughly the equivalent in energy of the petroleum it continued to import. But when the gas fields (which represent about twenty years' worth of Dutch energy consumption at current rates) are exhausted, Holland will once again depend heavily on the rest of the world for fossil fuels or uranium.

In short, the people of the Netherlands didn't build their prosperity on the bounty of the Netherlands, and are not living on it now. Before World War II, they drew raw materials from their colonies; today they still depend on the resources of much of the world. Saying that the Netherlands is thriving with a density of 1,031 people per square mile simply ignores that those 1,031 Dutch people far exceed the carrying capacity of that square mile.

This "carrying-capacity" definition of overpopulation is the one used in this book. It is important to understand that under this definition a condition of overpopulation might be corrected with no change in the number of people. For instance, the impact of today's 665 million Africans on their resources and environment theoretically might be reduced to the point where the continent would no longer be overpopulated. To see whether this would be possible, population growth would have to be stopped, appropriate assistance given to peasant farmers, and certain other important reforms instituted. Similarly, dramatic changes in American lifestyle might suffice to end overpopulation in the United States without a large population reduction.

But, for now and the foreseeable future, Africa and the United States will remain overpopulated—and will probably become even more so. To say they are not because, if people changed their ways, overpopulation might be eliminated is simply wrong—overpopulation is defined by the animals that occupy the turf, behaving as they naturally behave, not by a hypothetical group that might be substituted for them.

http://dieoff.org/page27.htm

INTERNATIONAL CONFERENCE
ON POPULATION AND DEVELOPMENT
Cairo, 5 - 13 September 1994

TOO MANY RICH PEOPLE :

Weighing Relative Burdens on the Planet
by Paul Ehrlich

Concern about population problems among citizens of rich countries generally focuses on rapid population growth in most poor nations. But the impact of humanity on Earth's life support systems is not just determined by the number of people alive on the planet. It also depends on how those people behave.

When this is considered, an entirely different picture emerges: the main population problem is in wealthy countries. There are, in fact, too many rich people.

The amount of resources each person consumes, and the damage done by the technologies used to supply them, need to be taken as much into account as the size of the population. In theory, the three factors should be multiplied together to obtain an accurate measurement of the impact on the planet*. Unhappily, Governments do not keep statistics that allow the consumption and technology factors to be readily measured—so scientists substitute per capita energy consumption to give a measure of the effect each person has on the environment.

USING AND CONSUMING

In traditional societies—more or less in balance with their environments—that damage may be self-repairing. Wood cut for fires or structures regrows, soaking up the carbon dioxide produced when it was burned. Water extracted from streams is replaced by rainfall. Soils in fields are regenerated with the help of crop residues and animal manures. Wastes are broken down and reconverted into nutrients by the decomposer organisms of natural ecosystems.

At the other end of the spectrum, paving over fields and forests with concrete and asphalt, mining the coal and iron necessary for steel production with all its associated land degradation, and building and operating automobiles, trains and aeroplanes that spew pollutants into the atmosphere, are all energy-intensive processes. So are drilling for and transporting oil and gas, producing plastics, manufacturing chemicals (from DDT and synthetic nitrogen fertilizers to chlorofluorocarbons and laundry detergents) and building power plants and dams. Industrialized agriculture uses enormous amounts of energy—for ploughing, planting, fertilizing and controlling weeds and insect pests and for harvesting, processing, shipping, packing, storing and selling foods. So does industrialized forestry for timber and paper production.

PAYING THE PRICE

Incidents such as Chernobyl and oil spills are among the environmental prices paid for mobilizing commercial energy—and soil erosion, desertification, acid rain, global warming, destruction of the ozone layer and the toxification of the entire planet are among the costs of using it.

In all, humanity's high-energy activities amount to a large-scale attack on the integrity of Earth's ecosystems and the critical services they provide. These include control of the mix of gases in the atmosphere (and thus of the climate); running of the hydrologic cycle which brings us dependable flows of fresh water; generation and maintenance of fertile soils; disposal of wastes; recycling of the nutrients essential to agriculture and forestry; control of the vast majority of potential crop pests; pollination of many crops; provision of food from the sea; and maintenance of a vast genetic library from which humanity has already withdrawn the very basis of civilization in the form of crops and domestic animals.

THE RELATIVE IMPACT

The average rich-nation citizen used 7.4 kilowatts (kW) of energy in 1990—a continuous flow of energy equivalent to that powering 74 100-watt lightbulbs. The average citizen of a poor nation, by contrast, used only 1 kW. There were 1.2 billion people in the rich nations, so their total environmental impact, as measured by energy use, was 1.2 billion x 7.4 kW, or 8.9 terawatts (TW)—8.9 trillion watts. Some 4.1 billion people lived in poor nations in 1990, hence their total impact (at 1 kW a head) was 4.1 TW.

The relatively small population of rich people therefore accounts for roughly two-thirds of global environmental destruction, as measured by energy use. From this perspective, the most important population problem is overpopulation in the industrialized nations.

The United States poses the most serious threat of all to human life support systems. It has a gigantic population, the third largest on Earth, more than a quarter of a billion people. Americans are superconsumers, and use inefficient technologies to feed their appetites. Each, on average, uses 11 kW of energy, twice as much as the average Japanese, more than three times as much as the average Spaniard,

and over 100 times as much as an average Bangladeshi. Clearly, achieving an average family size of 1.5 children in the United States (which would still be larger than the 1.3 child average in Spain) would benefit the world much more than a similar success in Bangladesh.

CLOSING THE GAP

Professor John P. Holdren of the University of California has generated an "optimistic" scenario for solving the population- resource-environment predicament. This envisages population growth halted at 10 billion a century from now, and rich nations reducing their energy consumption to 3 kW a head. His population target is feasible with modest effort, and the reduction in energy consumption could be achieved with technologies already in hand—given the necessary political will—and would produce an increase in the quality of life. This would provide room for needed economic growth in poor nations, which could triple their per-person energy use to 3 kW. Thus the gap between rich and poor nations would be closed, while the total world impact would increase from 13 TW to 30 TW (10 billion x 3 kW).

Will the environment a century hence be able to support 2.3 times as much activity as today? It's questionable, but perhaps with care it could, at least temporarily. Success would require a degree of cooperation, care for our fellow human beings, and respect for the environment that are nowhere evident now. But society has shown it can change rapidly when the time is ripe; let us hope that the United Nations International Conference on Population and Development will help ripen the time.

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* The relationship is summarized in the classic I=PAT identity: Impact is equal to Population size, multiplied by per capita consumption (Affluence), in turn multiplied by a measure of the damage done by the Technologies chosen to supply each unit of consumption.

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UNEP Feature 1994/8